

**REMARKS**

The Examiner has rejected Claims 1-7, 15, and 21 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Examiner has also rejected Claims 1-7, 15, and 21 under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification commensurate in scope with these claims. The Examiner has further rejected Claim 15 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

In addition, the Examiner has rejected Claims 1-7, 15, and 21 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claim 1 of U.S. Patent No. 5,843,454, and Claim 1 of U.S. Patent No. 5,518,723.

Claim 15 stand currently canceled. Claims 8-14 and 16-20 stand previously withdrawn. Claims 1-14 and 16-21 are currently pending. The following remarks are considered by applicant to overcome each of the Examiner's outstanding rejections to current Claims 1-7 and 21. An early Notice of Allowance is therefore requested.

**I. ANY NEXT OFFICE ACTION OF THE EXAMINER MUST BE COMPLETE IN AND OF ITSELF**

The rejections of Examiner's current Office Action contains references to multiple previous Office Actions. However, the claims have been amended throughout the course of the prosecution of the current Application. As such, it is very difficult to determine Examiner's exact current reasons for the rejections of the claims. In other words, due to the amendments to the claims, merely stating that a rejection is maintained is insufficient.

Accordingly, Applicants respectfully assert that Examiner's current Office Action is at a minimum unclear, and quite possibly is incomplete. Therefore, Applicants respectfully request that Examiner must explain all of Examiner's reasons for rejecting the claims in any future Office Actions.

**II. REJECTION OF CLAIMS 1-7 AND 21 UNDER 35 U.S.C. § 112, FIRST PARAGRAPH –  
WRITTEN DESCRIPTION**

On page 2 of the current Office Action, the Examiner rejects claims 1-7, 15, and 21 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. This rejection is respectfully traversed and believed overcome in view of the following discussion.

**Claims 1-7 and 21**

Claim 1 states, in part:

“wherein an equivalent of a fragment of CD4 is any molecule that mimics the conformation of any fragment of CD4 and which can bind to gp120.”

Examiner asserts that the phrase “the conformation of any fragment of CD4” is not conventional in the art or known to one of ordinary skill in the art. As below above, however, this is incorrect. Rather, the phrase “the conformation of any fragment of CD4” is conventional in the art. Therefore, Applicants respectfully request the Examiner withdraw the assertion that these phrases are not conventional in the art.

Regarding the phrase “the conformation of any fragment of CD4”, the only words the Examiner can possibly be asserting are not conventional are “conformation” and “fragment of CD4”. However, it is known that proteins fold into one, or more, specific spatial conformations, driven by a number of noncovalent interactions such as hydrogen bonding, ionic interactions, Van der Waals’ forces and hydrophobic packing. Wikipedia, The Free Encyclopedia, [http://en.wikipedia.org/wiki/Protein\\_conformation](http://en.wikipedia.org/wiki/Protein_conformation) (visited on 3/20/08) (a copy of this article is attached as Appendix A). The “conformation” of proteins is something taught in undergraduate level organic chemistry, and is therefore certainly conventional in the art. Accordingly, it is respectfully asserted that one of ordinary skill in the art would fully understand what “conformation” means in the above phrase.

In response, Examiner asserts that it is the structural feature of the phrase “the conformation of any fragment of CD4” which fails to comply with the written description requirement.

However, a “fragment of CD4” is defined by Claim 1. In fact, Claim 1 explicitly states, in part:

“wherein a fragment of CD4 includes either the first domain of CD4, the second domain of CD4, both the first and second domains of CD4, or a combination of the first or second domain of CD4 and the third or fourth domain of CD4....”

As such, a fragment of CD4 in Claim 1 cannot possibly be “as small as a two amino acid residue”, as is asserted by Examiner on page 3 of the current Office action. Rather, as stated above, a fragment of CD4 must include either (1) the first domain of CD4, (2) the second domain of CD4, (3) both the first and second domains of CD4, or (4) a combination of the first or second domain of CD4 and the third or fourth domain of CD4. This portion of Claim 1 specifically describes the main structural components of “a fragment of CD4”. Each of these components and their conformations are known to those of ordinary skill in the art.

Thus, one of ordinary skill in the art would certainly be familiar with the conformation of any fragment of CD4 as defined by Claim 1.

Since (1) the word “conformational” is conventional in the art, (2) the phrase “fragment of CD4” is specifically defined by Claim 1, and (3) the components of a “fragment of CD4”, as defined by Claim 1, are known to those of ordinary skill in the art, their combination to form the phrase “the conformation of any fragment of CD4” must certainly be understandable to those of ordinary skill in the art, and therefore adequately described by the Specification.

Accordingly, Applicants respectfully assert that Claim 1 is adequately described, as are corresponding Claims 2-7 and 21 because they are dependent from Claim 1. Therefore, Applicants respectfully request that Examiner withdraw the rejection of claims 1-7 and 21 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

**Claim 3**

In addition to the Examiners rejection of Claim 1, the Examiner further seems to reject the language of Claim 3 regarding “cryptic epitopes”.

Claim 3 states:

“The immunogenic complex of claim 1 **wherein cryptic epitopes are revealed.**” (emphasis added).

Similarly to the phrase “conformation”, the phrase “cryptic epitopes” is also conventional in the art. In particular, a “cryptic epitope”, also known as a cryptotope, is known to be an antigenic site or epitope hidden in protein or virion because it is present on the surface subunits that become buried. Wikipedia, The Free Encyclopedia, <http://en.wikipedia.org/wiki/Cryptotope> (visited on 3/20/08) (a copy of this article is attached as Appendix B). Moreover, a Google search of the phrase “what are cryptic epitopes” yielded about 287,000 results. A copy of the first ten results is attached as Appendix C. Such a widely used phrase must be conventional in the art. Therefore, Applicants respectfully request the Examiner withdraw the assertion that the phrase “cryptic epitopes” is not conventional in the art.

In response, Examiner asserts that the disclosure of the Specification is contrary to the assertion that “cryptic epitopes” are conventional in the art. In particular, Examiner cites a portion of the Specification which states:

“We **have discovered** that a gp120-CD4 covalently bonded complex presents **a specific subset of cryptic epitopes** on gp120 and/or CD4 not present on the uncomplexed molecules. This complex elicits neutralizing antibodies with **novel specificities** and is thus useful in vaccines and immunotherapy against HIV infection.” Specification, P. 1, Lns. 15-19; P. 5, Lns. 23-27 (emphasis by Examiner).

Examiner asserts that the “specific subset of cryptic epitopes” of the Specification does not appear to be conventional in the art or known to one of ordinary skill in the art. If they were conventional, Examiner asserts there would be no need to “discover” them. In addition, Examiner states that the structural features of the “specific subset of cryptic epitopes” are not

described by the Specification, and that the Specification does not describe what specific “novel specificities” the claimed complex has.

These assertions by the Examiner are irrelevant. In particular, Examiners arguments all revolve around language that does not appear in the Claims. In other words, Examiner is improperly limiting Claim 3 by importing language from the Specification which is not contained in the Claims. Moreover, the “novel specificities” to which Examiner refers relates to the neutralizing antibodies, and not to any claimed complex.

The simple fact is that Claim 3 relates to “cryptic epitopes” in general, and not just to the “specific subset of cryptic epitopes” discussed in the Specification. Cryptic epitopes, in general, are most definitely understood by those of ordinary skill in the art, and Examiner does not assert otherwise. As such, one of ordinary skill in the art would certainly understand what is meant by the specific complex of Claim 1, wherein cryptic epitopes are revealed in general, as stated in Claim 3.

Accordingly, Applicants respectfully assert that Claim 3 is adequately described. Therefore, Applicants respectfully request that Examiner withdraw the rejection of Claim 3 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

### **III. REJECTION OF CLAIMS 1-7 AND 21 UNDER 35 U.S.C. § 112, FIRST PARAGRAPH – SCOPE OF ENABLEMENT**

On pages 3-4 of the current Office Action, the Examiner rejects claims 1-7, 15, and 21 under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification commensurate in scope with these claims.

First, this appears to be a description rejection, and not an enablement rejection as initially made in the Office Action of 11/20/06. As such, this rejection is overcome by the above

arguments related to the written description as to exactly how the specification describes the language which is present in the Claims.

### **Claims 1-7 and 21**

As stated above, Claim 1 states, in part:

“wherein a **fragment** of CD4 **includes either** the **first domain** of CD4, the **second domain** of CD4, both the **first and second domains** of CD4, or a **combination** of the **first or second domain** of CD4 **and the third or fourth domain** of CD4;”

“wherein an **equivalent** of a fragment of CD4 is any molecule that **mimics the conformation** of any **fragment** of CD4 **and** which can **bind to gp120**.” (emphasis added).

If Examiner is actually rejecting the claims because of insufficient enablement, which is not clear from Examiner’s current rejection, Applicants must point out that Claim 1 was previously amended to specifically state (1) what is a “fragment of CD4”, and (2) what is an “equivalent of a fragment of CD4”. In particular, the amended to Claim 1 relating to defining what is a “fragment of CD4” was made in the previous Response, and is **not** addressed by the Examiner in the current Office Action.

As discussed above, between the definitions contained in Claim 1 and the general understanding of one of ordinary skill in the art, both a “fragment of CD4” and an “equivalent of a fragment of CD4” are enabled by Claim 1 and the Specification.

Accordingly, Applicants respectfully assert that Examiner has failed to establish a prima facie case of nonenablement of Claim 1, and corresponding Claims 2-7 and 21 because they are dependent from Claim 1. Therefore, Applicants respectfully request that Examiner withdraw the rejection of Claims 1-7 and 21 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

### **Claim 3**

As stated above, Claim 3 states:

“The immunogenic complex of claim 1 **wherein cryptic epitopes are revealed**.” (emphasis added).

If Examiner is actually rejecting the claims because of insufficient enablement, which is not clear from Examiner's current rejection, Applicants must point out that, as discussed above, it is "cryptic epitopes" in general which are claimed, and not the "specific subset of cryptic epitopes" to which Examiner points in the Specification. Since it is known how to obtain cryptic epitopes in general, one of ordinary skill in the art would know how to obtain the specific complex of Claim 1, wherein cryptic epitopes are revealed in general, as stated in Claim 3.

Accordingly, Applicants respectfully assert that Examiner has failed to establish a prima facie case of nonenablement of Claim 3. Therefore, Applicants respectfully request that Examiner withdraw the rejection of Claim 3 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

#### **IV. REJECTION OF CLAIMS 1-7 AND 21 ON THE GROUND OF NONSTATUTORY OBVIOUSNESS-TYPE DOUBLE PATENTING**

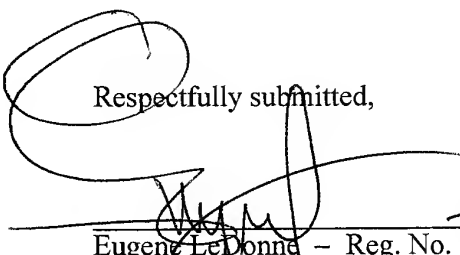
On page 6 of the current Office Action, the Examiner rejects claims 1-7, 15, and 21 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claim 1 of U.S. Patent No. 5,843,454, and Claim 1 of U.S. Patent No. 5,518,723. This rejection is respectfully traversed and believed overcome in view of the following discussion.

Applicants respectfully assert that the above rejections can be eliminated by the filing of a terminal disclaimer and that such a disclaimer need not be filed until the claims are otherwise determined to be allowable by the Examiner. Accordingly, Applicants respectfully reserve the right to file a terminal disclaimer and assert that the 1-7 are otherwise in allowable form.

Based upon the above remarks, Applicants respectfully requests reconsideration of this application and its early allowance. Should the Examiner feel that a telephone conference

with Applicants' attorney would expedite the prosecution of this application, the Examiner is urged to contact him at the number indicated below.

Respectfully submitted,



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